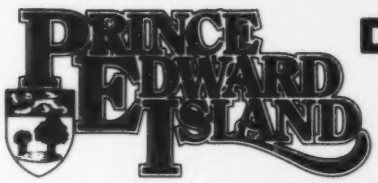


Department of
Energy and
Forestry

Annual Report for
April 1, 1983 - March 31, 1984

TO HIS HONOUR

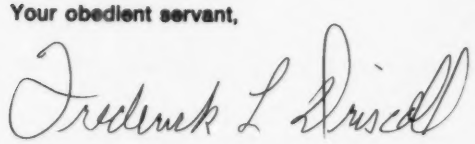
THE HONOURABLE JOSEPH AUBIN DOIRON
Lieutenant-Governor of Prince Edward Island

May it please your Honour:

I have the honour to submit herewith the Annual Report of the Department of Energy and Forestry for the fiscal year April 1, 1983 to March 31, 1984.

I have the honour to be, sir,

Your obedient servant,



Frederick L. Driscoll
Minister of Energy and Forestry

Charlottetown,
Prince Edward Island
December, 1984

Minister's Message

In 1983-1984 my department experienced its first full year of activities since its creation in 1982.

One outstanding achievement of the past year, which I was especially pleased to have announced was the signing on July 29, 1983, of the Forest Resource Development Agreement between the province of P.E.I. and the Federal Government. This five-year agreement provides $20.144 million to forestry programs which will be cost-shared with the Federal Government. I anticipate important benefits from this agreement for the people of Prince Edward Island as we enhance the use of our local forest resource.

We have been witnessing growing public and private endeavors in the use of wood for energy. Our detailed forest inventory has told us that we can safely harvest, on a sustained basis, a quantity of fuel wood equivalent to about three green tons per capita annually. Our hope is to supply biomass energy for homes, institutions and industry and at the same time to improve our forests through better woodlot management.

With this objective in mind, the Forestry Branch has moved rapidly to implement the forestry agreement which will encourage private woodlot owners to develop their resource. The forestry program will complement the Energy Subagreement which is expected to be signed with the Federal Government as part of the Economic Regional Development Agreement at the beginning of Fiscal Year 1984-85. Negotiations for that agreement point to an emphasis on wood energy for domestic and industrial purposes.

New approaches to the use of wood, in the form of wood chips, for heating and industrial purposes are a major thrust of P.E.I. Government energy policy and are coordinated by the P.E.I. Energy Corporation. I have been very encouraged by the success of wood-chip-fired installations around the province which have been sponsored by the Energy Corporation.

Energy Branch staff have also pursued a wide variety of activities in energy planning and energy conservation, while contributing to several intergovernmental committees.

The department engaged in a detailed study of the province's electricity supply and continued to negotiate for less expensive power, and for the first time we had on staff a Mineral Development Coordinator who has begun the task of surveying the province's potential mineral sector.

We are in a period of evaluation following the unsuccessful offshore petroleum exploration well drilled by Chevron Canada Resources Ltd. in 1983 and, therefore, there was no new petroleum exploration planned in or around P.E.I. in 1984. There has been, however, increased interest in the onshore and we look forward to the possibility of more seismic work and new explorations in the province.

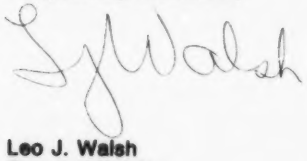
Forest resource management and energy planning are both complex matters in which governments must often take a leading role to ensure benefits to our communities. The myriad of activities and programs described in this annual report demonstrate that the Department of Energy and Forestry is responding effectively to that challenge.

Honourable Frederick L. Driscoll
Minister
Department of Energy and Forestry
P.O. Box 2000
Charlottetown, P.E.I.
C1A 7N8

Dear Mr. Minister:

I am pleased to submit the Annual Report of the Department of Energy and Forestry for the fiscal year 1983-84.

Respectfully submitted,



Leo J. Walsh
Deputy Minister
Department of Energy and Forestry

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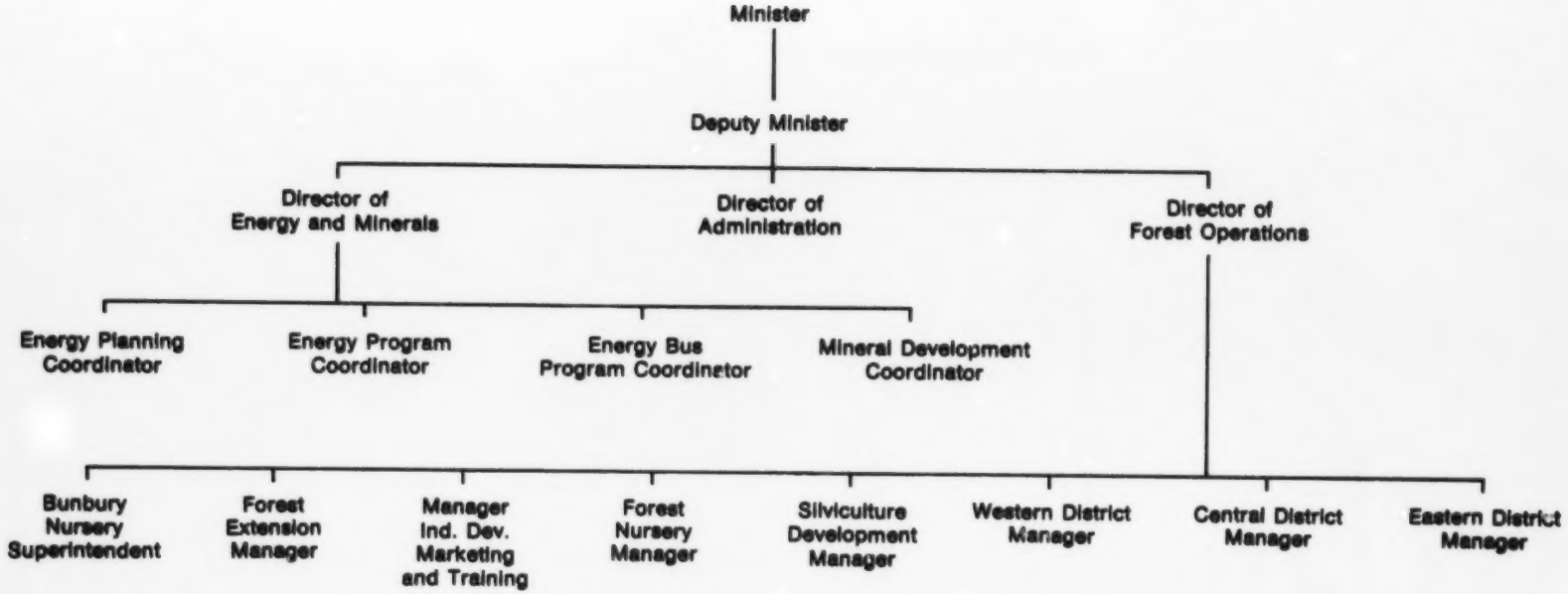

Minister
Deputy Minister
Director of Energy and Minerals
Director of Administration
Director of Forest Operations
Energy Planning Coordinator
Energy Program Coordinator
Energy Bus Program Coordinator
Mineral Development Coordinator
Bunbury Nursery Superintendent
Forest Extension Manager
Manager Ind. Dev. Marketing and Training
Forest Nursery Manager
Silviculture Development Manager
Western District Manager
Central District Manager
Eastern District Manager

ENERGY AND MINERALS BRANCH

Introduction

The principal responsibilities of the Energy and Minerals Branch include the development of energy policy, monitoring the evaluation of energy alternatives, provision of conservation and alternatives information to the public, maintaining interprovincial and international liaisons, and regulating and encouraging the exploration for minerals and oil and gas within the province.

The principal outreach activity of the Branch continued to be the EnerSave for Industry and Commerce Program, which was delivered by the province with the financial support of the Government of Canada under the terms of the Canada/P.E.I. Agreement on Industrial Energy Conservation. The province's involvement in the program ended as of March 31, 1984, and it is now to be direct-delivered by the Federal Government as the Canada Energy Audit Program.

The energy group within the Branch continued to deliver a wide variety of conservation, public awareness and information programs, including the provision of furnace efficiency test kits on a loan basis, the provision of an infrared thermography scan service for residences on a nominal fee basis, and the continuation of P.E.I. EnerPool, a successful vanpooling operation.

During Fiscal Year 1983-84 discussions continued with other governments, aimed at achieving a substantial reduction in electricity rates for the province. Support for this activity came from the Department's long-term consultant in this area and from the energy economist on the staff of the Branch. Table 1 shows a comparison of energy prices across Canada in 1983, while Figure 1 illustrates the forms and uses of energy by various economic sectors in Prince Edward Island.

TABLE 1

COMPARATIVE ENERGY PRICES IN CANADA FOR 1983
(comparative index in brackets, Average = 100)

	Home Heating Oil (¢/L)	Natural Gas (Res.) ($/10 cu.m)	Electricity (Res.) ($/750 kW.h/Mo.)	Electricity (Ind.) ($/400,000 kW.h/Mo.)
Nfld.	35.1 (104)	-	44.25 (112)	17,499.81 (099)
P.E.I.	33.7 (100)	-	84.68 (213)	41,171.07 (234)
N.S.	33.5 (100)	-	44.93 (113)	18,584.98 (106)
N.B.	33.5 (100)	-	41.28 (104)	16,912.05 (096)
Que.	33.5 (100)	2.44 (131)	29.10 (073)	15,169.50 (086)
Ont.	32.8 (098)	2.29 (123)	30.99 (078)	13,802.58 (078)
Man.	33.4 (099)	1.86 (100)	24.67 (062)	9,257.30 (053)
Sask.	32.5 (097)	1.45 (078)	29.19 (074)	15,027.04 (085)
Alta.	- -	1.36 (073)	34.27 (086)	15,736.94 (089)
B.C.	34.3 (102)	1.74 (094)	33.32 (084)	12,966.59 (074)
Comparative Index Range	7	58	151	181

Source: Energy Statistics Handbook, Energy, Mines and Resources Canada

On March 31, 1984, the Government of P.E.I. signed a 5-year Economic Regional Development Agreement (E.R.D.A.) with the Government of Canada, one element of which is to be a subagreement on energy. Negotiations are actively underway aimed at concluding this agreement shortly, and when signed it will be the only energy subagreement under any E.R.D.A. in Canada. The emphasis is expected to be on the development of the forest biomass energy resource in the province.

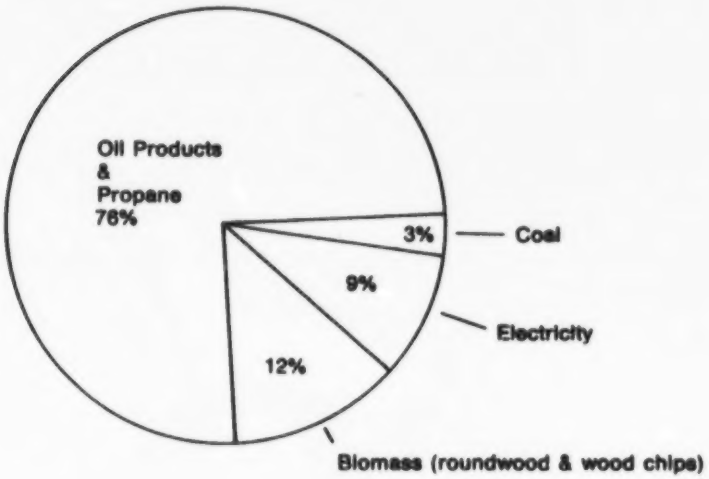
The ability of the Branch to effectively administer P.E.I.'s mineral lands and its oil and gas lands are enhanced by the acquisition, in December 1983, of a Mineral Development Coordinator. This individual is also responsible for the integration of the province's mineral information system with the national one, for establishing and maintaining diamond drill core storage on the island, and for dealing with requests for information from professionals and from the general public.

Energy Bus Program Coordinator, Cop Macdonald, staffs a display promoting the National Energy Audit Program.

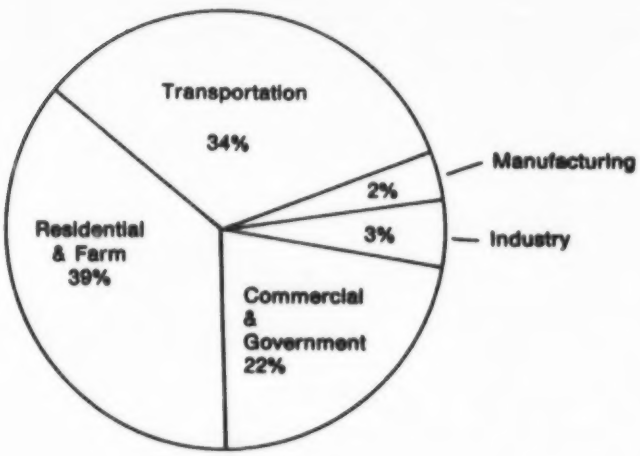
FIGURE 1

P.E.I. FORMS & USES OF ENERGY 1982

FORMS OF ENERGY



ENERGY USE BY ECONOMIC SECTOR



Source: Statistics Canada Cat. 57-002 1982-IV
Proportions are based on units of energy. In 1982 about 18.9 'petajoules' of energy were used in the province, the equivalent of about 3 million barrels of crude oil.

EnerSave for Industry and Commerce

The EnerSave for Industry and Commerce Program, which was carried out under the Canada/P.E.I. Agreement on Industrial Energy Conservation, came to an end on March 31, 1984. The program will continue to be delivered by the Federal Government as the Canada Energy Audit Program. This program was active throughout the 1983-84 fiscal year and helped industrial, commercial and institutional organizations to reduce their energy demand. The program's three elements were:

1. Energy Audits
2. Consultant Advice and Grants
3. Energy Conservation Workshops and Seminars

The EnerSave energy audit was a free comprehensive study of an organization's energy use pattern. Two 2-person audit teams staffed two computer-equipped "energy buses". These audit teams conducted the studies, determined areas of potential energy savings, and recommended specific energy conservation measures. Businesses of all kinds - industrial plants, institutions, government buildings, farms, churches and commercial apartment buildings - were eligible for these energy audits. Private residences were not. From the beginning of the program in late 1977 to the end of 1983, $18.9 million in energy bills were audited with annual potential savings of 4.0 million (20.9%) identified — a total of 903 audits. Statistics for the fiscal year just passed are shown in Table 2.

TABLE 2

ENERSAVE FOR INDUSTRY AND COMMERCE
AUDIT SUMMARY
APRIL 1, 1983 TO MARCH 31, 1984

	No. of Visits	Annual Energy Bills Audited ($)	Annual Potential Savings ($)	% Average Savings
First Time Audits	205	4,423,013	713,106	16.1
Re-Audits	42	2,082,760	366,627	17.6
Grand Total	247	6,505,773	1,079,733	16.6

Where additional engineering analysis of private sector facilities was required, help was available through a two-tiered consultant program. For small jobs (under $3,000 annual potential savings) the consultant normally worked for and was paid directly by the program. For large jobs (or any sized job when client preferred) the consultant was hired by and paid by the client who was then reimbursed by the program for up to 90% of the consultant's fee. Consultant grants were not available for provincially or municipally owned facilities.

The delivery of energy conservation workshops and seminars was mandated under the Canada/P.E.I. Agreement. Two seminars on energy conservation in municipalities were held during 1983, and two seminars for the tourist industry were held in conjunction with the annual meeting of the Tourist Industry Association of Prince Edward Island.

EnerSave Update, a quarterly publication produced by the Energy Branch, continued to feature case studies of energy audits conducted under the EnerSave for Industry and Commerce Program. This year two special editions of Update were published focusing on the province's leading industries of agriculture and tourism.

Public Outreach Programs

As part of its conservation promotion and energy awareness activities, the Energy Branch offers numerous programs and participates in interprovincial and international energy committees. Supplying more information on all kinds of energy will continue to be an important function of the Branch, which has already established goodwill and credibility with the people of the province.

P.E.I. EnerPool: The EnerPool Program continues to demonstrate the potential for energy conservation in ride-sharing transportation; it began in 1978 with the lease of three 15-passenger vans, and in 1981 the fleet was increased to four. With a solid base of passengers and a waiting list for each van, the program has now been renewed with the third 3-year lease agreement on the vans. Each full van is estimated to reduce gasoline consumption by 47,000 litres per year. The Branch remains an active member of the Canadian Association of VanPool Operators (CAVPO), an organization devoted to the promotion of vanpooling across Canada.

Workshops: In cooperation with Canada Mortgage and Housing Corporation and Energy, Mines and Resources Canada, the Energy Branch presented several workshops on energy conservation for the general public in the fall of 1984. The workshops were very well received and represented a departure from the traditional seminar style in that the participants were able to have "hands-on" experience with various methods of energy retrofit.

The Energy Branch also sponsored two workshops on the retrofit of older or heritage buildings in the spring of 1984. One workshop was aimed at small business operators and the general public; the other was of a more technical nature and was limited to architects, building contractors and inspectors. These workshops were a joint venture with the P.E.I. Museum and Heritage Foundation.

Vehicle Efficiency Test Program: This was a sequel to the Triple E Check-Up Program under which mechanics were trained in the operation of exhaust gas analysers. With the financial support of the P.E.I. Energy Corporation, free vehicle efficiency tests were conducted over a six week period during October/November. A total of 350 tests were conducted on provincial and municipal government vehicles as well as privately owned vehicles.

Municipal Energy Management Program: This program is coordinated by the Energy Branch in conjunction with the Federation of P.E.I. Municipalities and the Department of Community Affairs. The first in a proposed series of workshops was held for representatives of municipalities within Queens County. To assist municipalities in determining their actual energy costs and the potential for reducing those costs, sets of energy record forms were compiled and sent to the clerks of all city, towns and villages across the Province.

Energy Information Service: Since 1980, the Energy Information Service has provided more than 1000 Island residents with information and assistance on energy conservation. The technical staff of the Energy Branch provided personalized information and advice on subjects ranging from renewable energy to home heating systems. The Branch also maintained an energy reference library, published a monthly energy cost index, and an annual Energy Update highlighting provincial energy statistics.

Furnace Efficiency Tests: To assist homeowners in assessing the operating condition of their home heating system, eight furnace efficiency test kits were made available free of charge on an overnight or weekend loan basis from the Energy Branch office in Charlottetown and from the five Regional Services Centres across the province. Simple operating instructions were provided with each kit and testing was done by Branch staff for homeowners requiring assistance.

Participants at a Hands-On Energy Workshop receive practical instruction on home energy improvement. The workshop introduced homeowners to energy-saving materials and helped them choose between the various retrofit options possible.

Island residents took advantage of this free Vehicle Efficiency Test during the fall of 1984. By the end of November, 350 tests had been completed.

Visitors to the Energy and Forestry display at the Confederation Court Mall, were able to discuss their energy and wood use concerns with staff and pick up a wide selection of resource materials.

Energy Officer, Patrick Mooney, checks the operating efficiency of a residential furnace. Test kits were available for over-night or weekend loan from the Energy Branch office in Charlottetown and Regional Services Centres throughout the province.

Display Program: Portable displays focusing on the theme of energy conservation and alternate fuel sources were presented at community exhibitions, energy fairs and shopping malls throughout the province.

Infrared Thermography Program: The continued interest in this program resulted in over 150 scans being performed on Island houses at homeowners' requests during the winter of 1983-84. Infrared thermography scanning is a unique tool enabling the trained operator to readily detect areas where insufficient or missing insulation results in heat loss. On-site analysis of problem areas and recommendations for corrective action were provided to all homeowners.

International Energy Days: International Energy Days is a bi-annual event sponsored by the New England Governors' and Eastern Canadian Premiers' Conference and coordinated by the Northeast International Committee on Energy (NICE). Charlottetown was selected to represent Prince Edward Island in the 1983 event and from October 17-22 city residents had an opportunity to participate in a wide variety of activities prepared by the coordinating committee, made up of representatives from City Council, service clubs and Energy Branch staff.

Intergovernmental Activities

The Branch continued to represent the province at the intergovernmental level through its activities with NICE (the Northeast International Committee on Energy), IPACE (the InterProvincial Advisory Council on Energy) and MEECC (the Maritime Energy Education Coordinating Committee).

A major highlight of the past fiscal year was the coordination by staff of the Branch of the publication of a Renewable Energy Project Book for NICE, publication of which is expected early in Fiscal Year 1984-85. The Branch representative to the IPACE Demand Restraint sub-committee monitored the completion of the Phase III report on emergency energy planning. Operating under the jurisdiction of the Maritime Province's Education Foundation, MEECC sponsored, among other projects, the production of energy conservation units for the junior high school level, and expects the in-servicing of materials in all three Maritime provinces to be completed in the fall of 1984. MEECC has a continuing mandate to work on the development of energy education materials under the Maritime Studies Program.

The Branch has actively supported and participated in promoting the CGSB Certification Program within the Province and is represented on the Provincial Certification Panel, which meets as required to review applications from companies and private contractors seeking certification.

The Branch was also represented on the Committee of Provincial Geologists, the Intergovernmental Working Group on the Mineral Industry, and the Coordinating Committee of Maritime Electrical Utilities.

Research and Planning

In 1983-84 the Energy Branch pursued intensive research on the electrical energy supply system of the province. This in-house effort was supplemented by assistance and advice from a utility consultant supplied by Shawinigan Consultants Ltd. of Montreal, a pre-eminent firm in the electrical field. These

investigations resulted in a better understanding of how electrical energy and power is purchased and supplied by the regional utilities.

Alternatives to the "economy energy" pricing formula used to determine the cost of energy purchased by Maritime Electric were examined, preparatory to further negotiations with New Brunswick Power and Hydro-Quebec to supply less expensive electrical energy to Prince Edward Island.

The winter of 1984 also saw the completion of the Energy Alternatives for P.E.I. study conducted by Energy, Mines and Resources in cooperation with the Energy Branch. This study showed that biomass energy, particularly firewood, has become a significant contributor to the province's domestic energy supplies. The Energy Branch expanded its work on the economics of wood-chip-fired industrial, commercial and institutional hot water and steam production in close cooperation with the Forestry Branch and the P.E.I. Energy Corporation.

Oil, Natural Gas and Minerals

The Energy and Minerals Branch has the responsibility of administering and enforcing the province's Oil and Natural Gas Act and the Mineral Resources Act. During the 1983-84 fiscal year the Branch hired a Mineral Development Coordinator whose responsibilities include responding effectively to the requests and inquiries related to the Acts themselves and also to the activities governed by these Acts. In addition, the Mineral Development Coordinator is responsible for encouraging and monitoring the results of petroleum and mineral exploration and geological research on and around the Island.

During the summer of 1983 Chevron Canada Resources Ltd., as operator, conducted an offshore exploratory drilling program north of Cable Head. The well, titled Irving Chevron Texaco Cablehead E-95, was drilled to a depth of 3,235 metres before being abandoned without encountering any significant amounts of oil or gas.

Other companies, in addition to Chevron, having an interest in the onshore and offshore oil and gas potential of the Island and holding permits in the area included Texaco Canada Resources Ltd. and Dome Petroleum Ltd.

The highlight of the year for the mineral sector of the Branch was the publication and distribution of "Geology of Prince Edward Island" by H.W. van de Poll. The release of this report can be viewed as the start of an ongoing government commitment to the development of P.E.I.'s mineral resources and should do much to encourage the systematic investigation of the province's mineral potential.

Chevron's Cable Head exploration well being drilled by Glomar High Island IX jack-up rig in July, 1983.

DEPARTMENT OF ENERGY & FORESTRY
EXPENDITURE SUMMARY
FISCAL YEAR 1983-1984

EXPENDITURES		
Departmental Management	$281,302	
		$281,302
Energy and Minerals Branch		
Branch Management	216,256	
Canada/P.E.I. Energy Agreement	440,832	
Maritime Electric Tax Rebate	1,431,000	
		$2,088,088
Forestry Branch		
Branch Management	984,309	
Operations	280,355	
Bunbury Nursery	156,601	
Environmental Management	3,404	
Fire Protection	36,835	
Provincial Parks Forest Management	33,358	
Greater Charlottetown Environmental District	25,384	
Hedgerow Shelterbelt	8,725	
Crown Land Forest Management Employment Project	110,914	
Charlottetown Watershed Forest Improvement Employment Project	30,791	
Private Land Management	43,741	
Headquarters Administration	72,445	
Extension	85,808	
Woodlot Technology Transfer	36,639	
Silviculture Development	80,032	
Industry Development	19,327	
Biomass Inventory	53,365	
Seedling Production	282,366	
Eastern District Crown Land	220,722	
Central District Crown Land	237,691	
Western District Crown Land	211,470	
Eastern District Administration	50,945	
Central District Administration	80,870	
Western District Administration	53,881	
		$3,199,998
DEPARTMENT TOTAL		$5,569,388

DEPARTMENT OF ENERGY & FORESTRY
REVENUE SUMMARY
FISCAL YEAR 1983-1984

REVENUES

Energy and Minerals Branch		
Gas and Oil Licenses	$ 212,513	
Fees and Services	1,925	
Sales (Miscellaneous)	260	
Canada/P.E.I. Energy Agreement	449,943	
		$ 664,641
Forestry Branch		
Operations	137	
Bunbury Nursery	104,152	
Provincial Parks Forest Management	47,582	
Greater Charlottetown Environmental District	35,507	
Hedgerow Shelterbelt Project	8,793	
Crown Land Forest Management Project	111,503	
Charlottetown Watershed Improvement Project	25,859	
Private Land Management	43,741	
Seedling Production	3,649	
Eastern District Sales (Miscellaneous)	311	
Central District Sales (Miscellaneous)	9,815	
Canada/P.E.I. Forest Development Agreement	1,473,255	
		$1,864,304
DEPARTMENT TOTAL		$2,528,945

FORESTRY BRANCH

Introduction

The principal activities of the Forestry Branch included delivery of a comprehensive forest management assistance program for woodlot owners, the management of 25,000 hectares of Crown land, research and development of new technology for wood production and processing and the provision of training, marketing and technical advisory services to the forest industry. Coordination of forest fire control operations and management of the Bunbury Nursery are also the responsibility of the Forestry Branch.

Prince Edward Island's forests cover 276,000 hectares, accounting for 46% of the province's land area (Figure 1). The development of a viable forest industry, based on a healthy and productive resource, presents both a challenge and an opportunity. Although our forests are among the most productive in Canada, they have suffered from neglect and poor harvesting practices over the past 200 years. The factors limiting growth in the forest industry are poor wood quality and the shortage of capital needed for long term investment in woodlot management.

As in past years, the emphasis of Forestry Branch programs continues to be on the improvement of private and Crown forest land Beginning in 1968, program funding was provided through the Comprehensive Development Program. Federal-Provincial negotiations begun in 1981 culminated in the signing on July 29, 1983, of a five-year Forest Resource Development Agreement. Under this Agreement, the Department and the Canadian Forestry Service will jointly administer $20.144 million in the delivery of the following programs:

PROGRAM DESCRIPTION	FIVE-YEAR BUDGET $ MILLIONS
1. Private Land Forest Management	4.494
2. Crown Land Management	4.040
3. Forest Development	
3.1 Forest Extension	.995
3.2 Woodlot Technology Transfer	.641
3.3 Silviculture Development	2.172
3.4 Industry Development	.492
3.5 Forest Biomass Inventory	.442
3.6 Seedling Production	1.626
4. Administration (staff support for program 1)	5.242

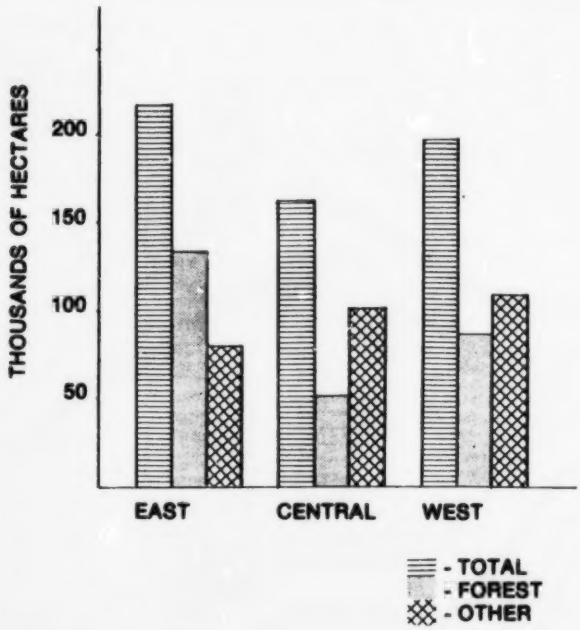
The federal contribution accounts for 68% of the total, or $13.688 million, while the provincial contribution is 32%, or $6.456 million.

The overall objective of this Agreement is to maximize the economic benefits to provincial residents which are attainable from the forest resource. Specific objectives are:

1. To permit the development of a wood fuel industry to double the consumption of wood from 168,000 m³ (70,000 cords) to 336,000 m³ (140,000 cords) by 1988, thus potentially decreasing fuel oil imports 111,000 barrels/year.
2. To permit the province to attain a level of production in sawn and processed lumber of 21 million board feet annually.
3. To increase direct employment in the forest industry from the present 400, to 600 person-years over the five-year plan.
4. To permit the development of income and employment opportunities in associated industries such as consulting, silvicultural contracting, Christmas trees, furniture and crafts, and maple syrup.

The use of wood as a source of renewable energy continued to increase. The Forestry Branch provided technical assistance in the development of several conversion projects notably the Unit 5 school complex in Abram's Village, the P.E.I. Hospital/Provincial Administrative Building complex in Charlottetown, Montague Junior High School and Summerset Manor. In cooperation with the P.E.I. Energy Corporation, the Forestry Branch is actively pursuing other conversion projects designed to increase the use of low-quality wood and stimulate expansion of the wood fuel industry.

FIGURE 1
SUMMARY OF LAND AREA BY FOREST DISTRICT



District Operations

Private and Crown land forest management programs are delivered by staff of the three district offices located at Wellington, Beach Grove and Southampton. Technical assistance is provided to woodlot owners in the development of management plans suited to the composition and potential of the woodlots and the owners' objectives. Statistics on the number of plans prepared and signed are shown in Figure 2 while work completed is summarized in Table 1 and Figures 3 and 4.

A total of $533,500 was paid out in incentives to woodlot owners in the fiscal year ending March 31, 1984 as compared to $524,900 for the previous 12 month period.

Crown land accounts for only 10% of Prince Edward Island's forest area yet it constitutes an important reserve of wood fibre for an expanding forest industry. Consequently, it must be managed intensively. The work completed by each district on Crown land is shown in Table 2. Quantities of cones collected by district silviculture crews for the seedling production program are shown in Table 3.

Each year the Forestry Branch offers standing wood (stumpage) on Crown land for sale by public tender, usually in June and September. Quantities sold are shown in Table 4 for each district by category of sale.

Stands of pulpwood and sawlogs suited to large scale harvesting operations are sold as commercial cuts. Fuelwood is sold by either of two methods. Group venture cuts are allocated to groups of four or more individual households, whereas tendered U-cuts are larger blocks purchased from the Branch and sold and managed by a local entrepreneur as individual ten cord lots. Group venture cuts are most popular with individuals who wish to pool their labour and equipment in conducting the harvest operation. The U-cut is most popular with those who prefer to work alone.

The Forestry Branch coordinates provincial forest fire control operations through district offices and with the aid of volunteer fire brigades at Alberton, Wellington, Vernon River, Mt. Stewart and Souris who operate specially-equipped trucks. A summary of forest fires by district and area burned is shown in Table 5.

FIGURE 2

PRIVATE LAND MANAGEMENT PROGRAM
WOODLOT MANAGEMENT PLANS - WRITTEN & SIGNED

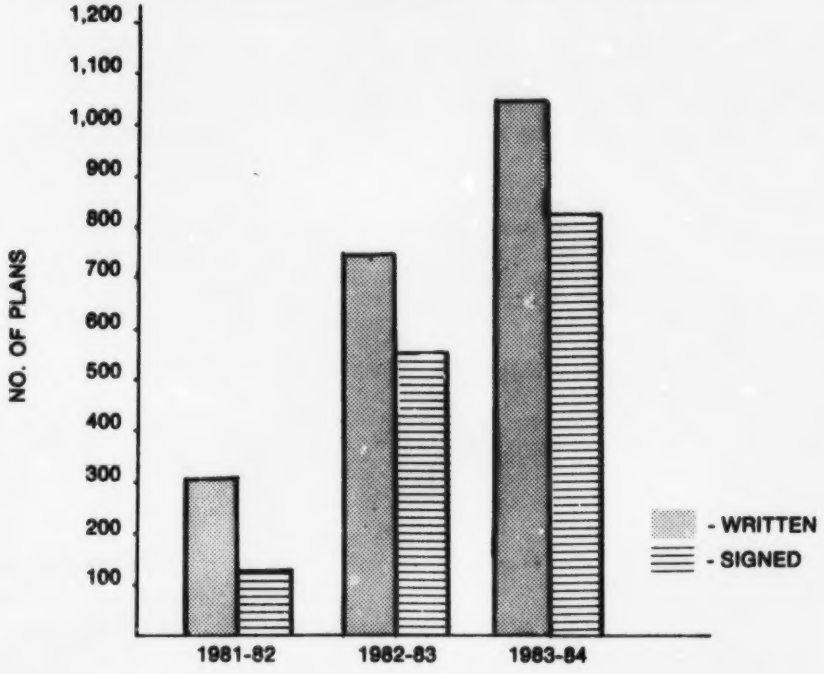


FIGURE 3

PRIVATE LAND MANAGEMENT PROGRAM
ROAD CONSTRUCTION AND BOUNDARIES

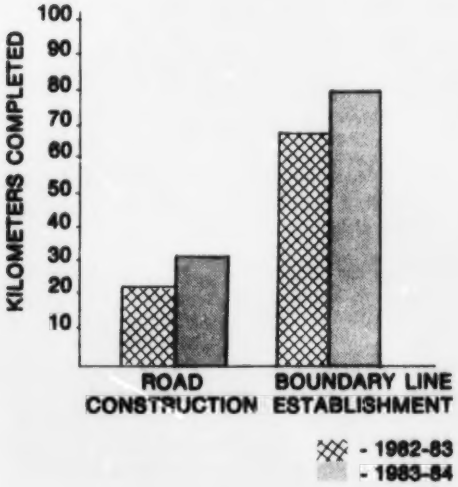


FIGURE 4

PRIVATE LAND MANAGEMENT PROGRAM
STAND IMPROVEMENT AND PLANTING

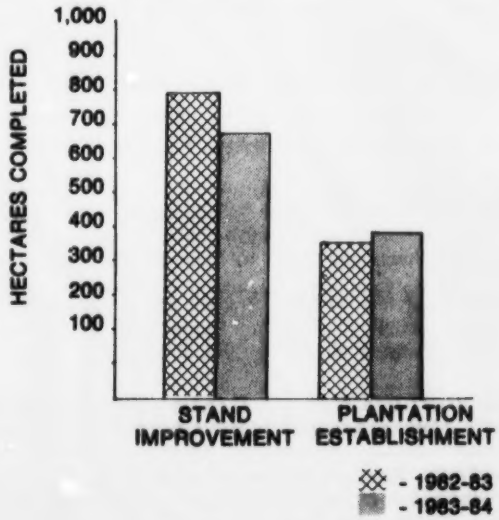


TABLE 1

PRIVATE LAND FOREST MANAGEMENT PROGRAM
SUMMARY OF WORK COMPLETED IN 1983-84

	EAST	CENTRAL	WEST	TOTAL
Road (km.)	15.9	8.2	7.5	31.6
Boundaries (km.)	15.6	6.6	58.0	80.2
Site Preparation (ha.)	146.8	52.4	42.0	241.2
Stand Improvement (ha.)	299.5	193.3	274.0	766.8
Plantation Maintenance (ha.)	2.5	4.6	55.0	62.1
# of Trees Planted	305,000	248,441	382,160	935,601

TABLE 2

CROWN LAND FOREST MANAGEMENT PROGRAM
SUMMARY OF WORK COMPLETED 1983-84

	EAST	CENTRAL	WEST	TOTAL
Road (km.)	4.1	3.6	1.6	9.3
Boundaries (km.)	-	0.5	-	0.5
Site Preparation (ha.)	55.3	15.3	6.7	77.3
Stand Improvement (ha.)	18.0	30.0	63.0	111.0
Plantation Maintenance (ha.)	22.4	-	-	22.4
# of Trees Planted	192,479	32,535	171,345	396,359

TABLE 3

CONES COLLECTED (BUSHELS)

	EAST	CENTRAL	WEST	TOTAL
E. Larch	31	12	23	66
R. Pine	24	20	23	67
A. Pine	-	13	-	13
W. Spruce	46.5	30	22	98.5
B. Spruce	-	48	40	88
Cedar	-	-	4	4
W. Pine	16	-	-	16
TOTAL	117.5	123	112	352.5

TABLE 4

CROWN LAND STUMPAGE SOLD BY PUBLIC TENDER (HECTARES)

	EAST	CENTRAL	WEST	TOTAL
Commercial Cut	48.4	3.2	8.0	59.6
U-Cut (Fuelwood)	4.0	5.3	5.0	14.3
Group Venture (Fuelwood)	9.8	-	17.5	27.3
TOTAL	62.2	8.5	30.5	101.2

TABLE 5

FOREST FIRES 1983-84

	# Fires	Area Burned (Hectares)
Eastern District	25	95.4
Central District	25	211.0
Western District	5	14.9
TOTAL	55	321.3

District staff cooperate with the Canadian Forestry Service in forest insect and disease monitoring. This task is assigned to three Pest Detection Officers and provides data which are then incorporated into defoliation and hazard surveys of spruce budworm and other tree pests. Figure 5 shows a comparison of budworm egg mass counts for the years 1981-1983. The 1983 survey shows a significant increase in the Western District over 1982 levels.

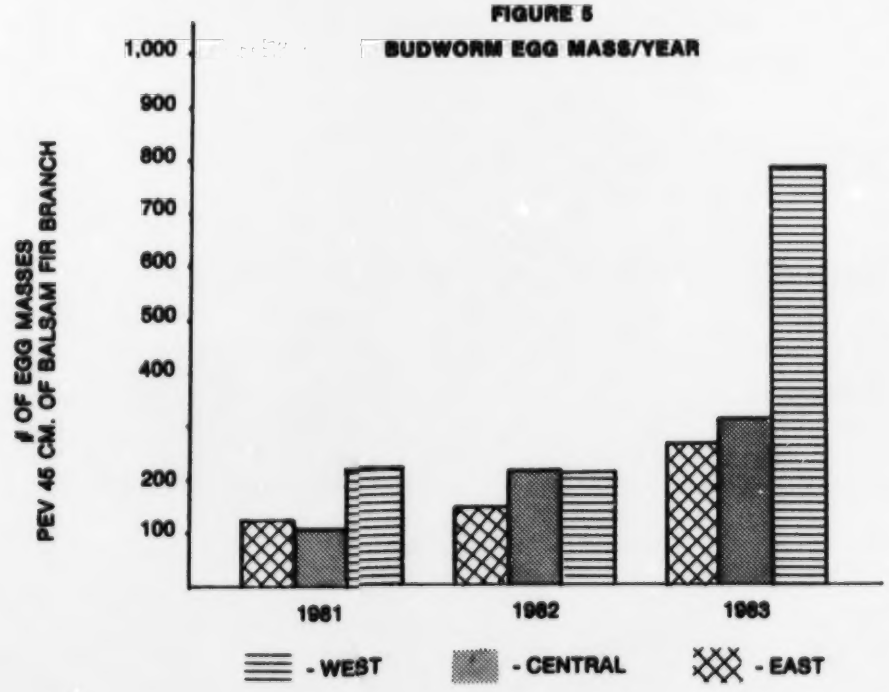
The map of spruce budworm defoliation in 1983 (Map 1) was compiled from an aerial survey of tree damage. Together, the defoliation survey (Table 6) and egg mass counts were used to forecast the hazard for 1984. The result was a prediction of moderate to severe defoliation of balsam fir and spruce in 1984.

TABLE 6

SPRUCE BUDWORM DEFOLIATION IN HECTARES

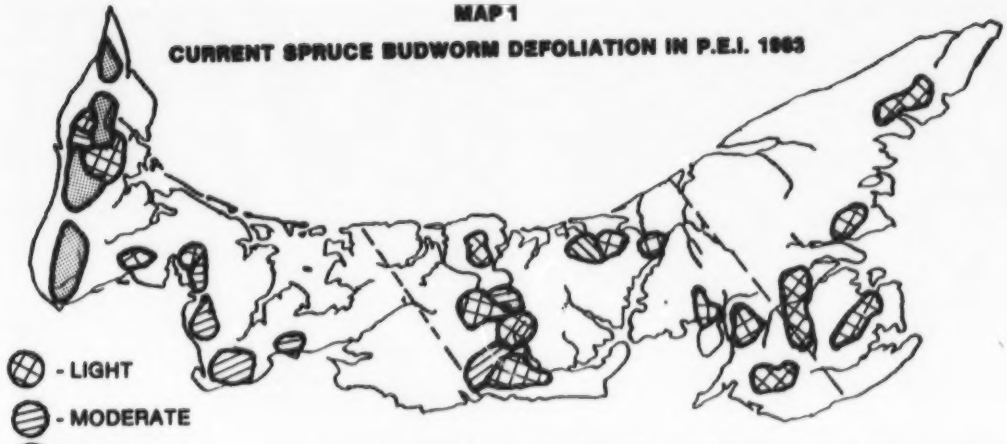
	1983	1982
Light	23,889	2,200
Moderate	15,824	2,700
Severe	10,070	10,400
TOTAL	49,783	15,300

FIGURE 5



MAP 1

CURRENT SPRUCE BUDWORM DEFOLIATION IN P.E.I. 1983



- LIGHT
- MODERATE
- SEVERE

(Map prepared by Maritimes Forest Research Centre, Canadian Forestry Service).

Another forest pest, the forest tent caterpillar, was also closely monitored. Moderate to severe defoliation of poplar and other hardwoods occurred on some 60,000 hectares in Prince and Queens Counties (Map 2), with the area between Wellington and O'Leary affected most severely.

Development of demonstration woodlots at Foxley River and Camp Tamawaby in the West, Brookvale and Auburn in Central and Valleyfield and New Harmony in the East continued. These areas will be utilized for practical demonstrations of woodlot management in an outdoor education program for woodlot owners, naturalists, school groups and the general public.

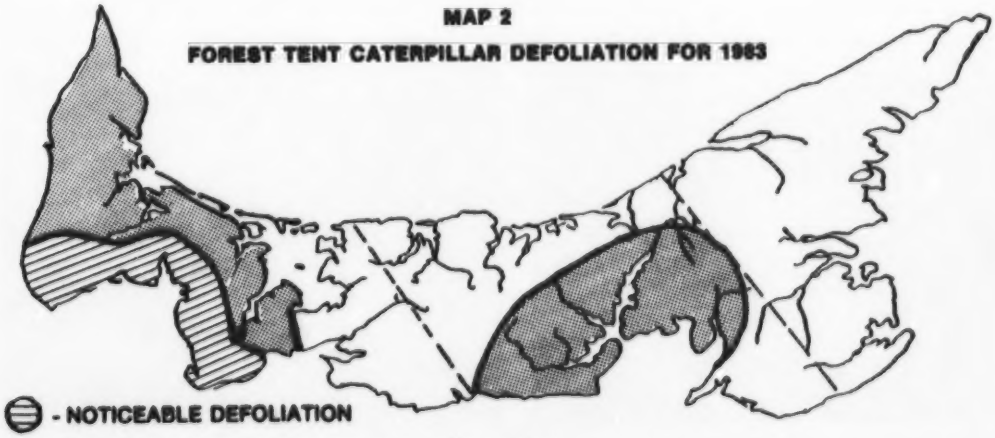
Over the past year, Western District staff attended continuing education courses at the Maritime Forest Ranger School in Fredericton, N.B., and provided information to interested groups and individuals on forestry's potential in Western P.E.I.

The Central District staff provided assistance to the Fish & Wildlife Division in the development of wildlife management plans, and to other groups involved with the Royalty Oaks and Queen Elizabeth Hospital properties.

Special activities undertaken by the Eastern District staff included work with 4-H, Boy Scout, Girl Guide and other groups interested in forestry.

MAP 2

FOREST TENT CATERPILLAR DEFOLIATION FOR 1983



- NOTICEABLE DEFOLIATION
- INFESTED BUT NO NOTICEABLE DEFOLIATION

(Map prepared by Forest Insect and Disease Survey Canadian Forestry Service).

Forest Extension

A survey of forestry-related attitudes and awareness among the public was conducted in March of 1984 by the Canadian Forestry Service, with assistance from forest extension staff. Its findings showed that Islanders are very limited in their knowledge of the forest resource and the forest industry, in terms of their nature, extent, problems and opportunities. Similarily, awareness of the Agreement, its objectives and programs, is extremely limited.

In response, a Public Information and Education Program was developed. The overall objective of the information program is to heighten public awareness of Prince Edward Island's forest resource, to develop a forest constituency and to encourage sound forest management practices.

Ongoing activities included the production of the monthly Cordy Boardfoot Newsletter in the Department of Agriculture's Cornerpost publication, and two weekly radio programs. Information sessions were held for Forestry Branch staff, school and youth groups, and community service organizations on various forestry topics.

New initiatives included the development of a media advertising campaign for radio, newspaper and television, which is scheduled to begin in the fall of 1984. An information booklet on the Forest Resource Development Agreement was produced by the Canadian Forestry Service, with assistance from Forestry Branch staff. The sixteen-page booklet was produced in French ("Les Forêts de l'Ile") and English ("Island Forests") versions.

Work continued on the design of a signage and interpretive package for the six demonstration woodlots, and for Crown and private land sites which exhibit forest management work of interest to the general public.

The Casual Chainsaw User Course for non-professional chainsaw users was again offered in 1983. Courses conducted in Wellington, Montague and Charlottetown saw 75 people improve their work, mechanical and safety skills in all areas of chainsaw use.

Woodlot Technology Transfer

The highlight of the past year was the second annual Small Woodlot Equipment Demonstration held at Brookvale in September. Attendance was up over last year and the 300 participants saw a wide range of woodlot management equipment in operation.

As in past years, new and modified equipment was tested for use on P.E.I. woodlots. Time and production studies were completed on the all-terrain cycle, bogie-wheeled trailer and a home-made winching device. Information from these studies was used to produce four new issues in the series "Development Notes", three on wood extraction and one on chipping.

Easy lift trailer and winch moving 8-foot pulp to a landing.

The research tree holding area at the J. Frank Gaudet Tree Nursery in West Royalty. These trees are used in growth and disease resistance experiments.

The skidding bar was demonstrated at the second annual Small Woodlot Equipment Demonstration.

A public information sign on the Brookvale Demonstration Woodlot shows how quickly the forest regenerates. Note the inferior quality species listed on the sign.

Silviculture Development

Major progress was made in the Tree Improvement Program, including the completion of a five-year operating plan. The plan was developed following a program review conducted with the assistance of forest geneticists from the Nova Scotia Department of Lands and Forests, the Canadian Forestry Service and the University of New Brunswick.

The second of two black spruce "plus-tree" seed orchards containing 11,000 seedlings was out-planted in May of 1983. The two orchards will begin producing superior quality black spruce seed in 1995, in quantities matched to the size of the Province's reforestation program.

An experiment was conducted in the controlled-environment greenhouses on grafted eastern larch. The objective was to shorten the time required for seed production from eight years to six by growing the grafts continuously in the greenhouse, for a period of eighteen months. The technique appears successful, and grafted eastern larch grown on this accelerated schedule will be out-planted on two prepared orchard sites, beginning in the summer of 1984.

With the assistance of an instructor from the Petawawa National Forestry Institute, a tree climbing course was held for Forestry Branch staff involved in cone and scion collection. Other participants in the three-day course came from the Maritimes Forest Research Centre, the N.B. Department of Natural Resources, the Fish & Wildlife Division and the Maine International Paper Company. Instruction was provided in equipment selection and maintenance, and climbing safety. The climbing technique is similar to that employed in mountaineering and is intended to avoid damaging "plus-trees" used in the Tree Improvement Program and other trees used repeatedly as seed sources.

Permanent sample plots were established in seven representative natural stands located throughout the province, to measure the volume response of residual trees to a thinning operation. The trials were established in 20-45 year-old stands, in sets of two plots each, one thinned and one left unthinned. The plots will be measured at five-year intervals, and again when they are harvested.

The Environmental Management study begun in 1981 at North Enmore and 1982 at Valleyfield Demonstration Woodlot was completed early in 1983, and a final report submitted by the contractor, the University of Prince Edward Island. An independent review of the results of the study was carried out by the Institute for Resource and Environmental Studies of Dalhousie University. Both concluded that the detrimental environmental effects of forest management operations conducted under the supervision of the Forestry Branch are very slight. Recommendations on drainage and improved road and bridge construction have been incorporated into revised operating procedures.

Forest Biomass Inventory

In 1983-84, staff of the Inventory Section completed the location and delineation of all 25,000 hectares of forested Crown land on inventory covertype maps. This information was incorporated into the pro-

Chipping slash and residual trees for wood energy.

vincial computer data base, and will be used by the district forestry staff in the development of management plans for Crown properties.

Growth studies were begun on eastern larch, sugar maple, white birch and yellow birch. Information from these studies will be used to produce growth and sit index curves for Island forests. These curves are used to model future wood supply and will help to establish a long-range optimum wood harvest plan for the province.

Microcomputers, installed in each of the three district forestry offices in 1982, were programmed to produce woodlot management plans for all new clients enrolled in the Private Land Forest Management Program.

Industry Development, Marketing and Training

A five-year plan was developed for each of these three areas, outlining the current situation, trends and constraints, objectives and actions required in each sector. Staff also assisted in the development of the Wood Energy Supply Program, which will form part of the proposed E.R.D.A. alternate energy sub-agreement.

Ongoing activities include the provision of a technical advisory service to harvesting contractors, pulpwood and firewood dealers, and sawmill operators. Major emphasis was placed on locating equipment needed to upgrade local sawmills. Assistance was provided to Christmas tree growers and maple syrup producers on product development and marketing.

A major effort in training of silvicultural workers was begun with the hiring in December of a training coordinator. This new initiative is in response to a shortage of skilled labour experienced by silviculture contractors. Agreement was reached between the provincial Department of Industry and the Canada Employment and Immigration Commission to fund an institutional training program. The course, conducted by Holland College, began in February, 1984, with an enrollment of 13 students and will continue for a sixteen-week period, providing trained workers to contractors during their peak operating season.

Forestry Nursery

The J. Frank Gaudet Tree Nursery in West Royalty produces bareroot and container-grown seedlings for reforestation on private and Crown land. This modern facility consists of two gutter-connected, double-layer polyethylene greenhouses with a total growing area of 3,700 square meters and a bareroot production area of 35 hectares.

Premier James Lee and Minister of Energy and Forestry, Hon. Frederick L. Driscoll congratulate David Smith on winning the Best Island Grown Christmas Tree Contest.

In the spring of 1983, approximately 1.5 million seedlings were shipped to the three districts and planted by government crews and private contractors (Table 7 and Table 8). Seedlings were transported from the nursery to the planting site in special trucks and graded prior to planting. This final grading resulted in a cull of 1.9%.

Black spruce, white spruce, red pine and eastern larch were the main species grown. Produced in smaller quantities were jack pine, hybrid poplar for hedgerow/shelterbelt planting, and balsam fir for Christmas trees.

In late March, the greenhouses were seeded with the 1985 crop. The growing schedule for these container seedlings calls for them to remain in the greenhouse until August, when they are moved to an outside holding area designed to provide shelter during the over-wintering period.

In the production of bareroot stock, outdoor beds are seeded in late May. The seedbeds are fertilized and tended for three years, so that young seedlings which germinate in the spring of 1984 will be outplanted in the spring of 1987.

Cones collected by district staff are brought to the nursery to be dried and sorted. These are, in turn, shipped to the Maritime Tree Seed Extraction Plant in Fredericton, N.B. for final processing.

TABLE 7

J. FRANK GAUDET TREE NURSERY
BAREROOT SEEDLINGS SHIPPED

	AGE CLASS	NUMBER
Red Pine	3 + 0	186,925
Red Pine	2 + 0	43,075
Balsam Fir	3 + 0	57,650
White Spruce	3 + 0	82,700
Black Spruce	-	72,875
Hybrid Poplar	-	7,675
		448,850

TABLE 8

J. FRANK GAUDET TREE NURSERY
CONTAINER SEEDLINGS SHIPPED

	AGE	NUMBER
Balsam Fir	2 yr.	7,450
White Spruce	1 yr.	329,305
Black Spruce	1 yr.	563,529
Jack Pine	2 yr.	19,885
Eastern Larch	1 yr.	121,396
		1,041,565

Bunbury Nursery

The Bunbury Nursery has three main functions:

1. To provide an advisory service to the general public on landscaping, planting and care of ornamentals.
2. To represent P.E.I. on the Atlantic Crops Advisory Committee on Ornamentals and Greenhouses and to conduct regional bedding plant and shrub hardiness trials.
3. To provide ornamental trees, shrubs, flowers and gardening supplies to the general public through operation of a retail sales outlet.

Sales of nursery stock increased by 34% over Fiscal Year 1982-83. Revenues totalled $104,152, including $19,000 from proceeds of the Cotton Trust for Rural Beautification. As well, a large increase was experienced in the number of requests for information on the care and handling of ornamentals and inquiries on insect and disease control.

In cooperation with the Atlantic Crops Advisory Committee, the bedding plant and shrub trials continued in 1983. Forty-four new varieties of shrubs were added to the existing thirty-four. The objective of these trials was to collect information on growth and hardiness and thereby select new varieties suited to our soils and climate.

The Nursery Superintendent participated in a number of radio and television programs, and annual commitments to community schools and judging events were met.

Special Projects

Three projects begun in 1982 under the Canada/P.E.I. Unemployment Insurance Forestry Job Creation Agreement were completed during the past year: Provincial Parks Forest Management; Charlottetown Watershed Forest Improvement; and Hedgerow/Shelterbelt Establishment. A fourth project, Crown Land Forest Improvement was begun in August, 1983 and completed in March. Together, these projects provided up to fifty-two weeks of employment to participants allowing them to receive the maximum Unemployment Insurance weekly benefit while they carried out valuable forest improvement work. Statistics on these projects are shown in Table 9.

Using plans prepared in 1982 through the Provincial Youth Development Program, nine students were hired in May of 1983 to plant white spruce, black spruce and hybrid poplar seedlings for Hedgerow/ Shelterbelt Establishment. A total of 76,000 seedlings were planted for this purpose, resulting in approximately 50 kilometers of new hedgerows for soil erosion control and energy conservation. Valuable assistance was received in the course of this program from staff of the Department of Agriculture.

TABLE 9

WORK COMPLETED ON SPECIAL PROJECTS 1983-84

	PROV. PARKS	CH'TOWN WTRSHD.	CROWN LAND	HEDGE-ROW/ SHELTER-BELT	TOTAL
Streambank Improvement (km.)	-	9.3	-	-	9.3
Roads & Boundaries (km.)	-	-	20.0	-	20.0
Stand Improvement (ha.)	100	12	55	-	167.0
# of Trees Planted	28,000	20,000	-	76,000	124,400
Wood Produced (m^3)	77,000	650	4,600	-	82,250
# of Man-Weeks of Employment	339	554	909	105	1,970
# of Jobs	20	18	40	7	85